



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/716,927	11/19/2003	Christopher P. Ausschnitt	FIS920030333 US1	6399
29505	7590	10/19/2004	EXAMINER	
DELIO & PETERSON, LLC 121 WHITNEY AVENUE NEW HAVEN, CT 06510			STOCK JR, GORDON J	
			ART UNIT	PAPER NUMBER
			2877	

DATE MAILED: 10/19/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/716,927

Applicant(s)

AUSSCHNITT ET AL.

Examiner

Gordon J Stock

Art Unit

2877

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 July 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-36 is/are pending in the application.
- 4a) Of the above claim(s) 1-22 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 23-36 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 August 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 20031119.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION***Election/Restrictions***

1. Applicant's election with traverse of Invention I (claims 23-36) in the reply filed on July 26, 2004 is acknowledged. The traversal is on the ground(s) that the invention was not independent and distinct and that separate searches would be unwarranted and duplicative. This is not found persuasive because the action of June 29, 2004 demonstrated the following:

That **Inventions II and I** are related as combination and subcombination. Inventions in this relationship are distinct if it can be shown that (1) the combination as claimed does not require the particulars of the subcombination as claimed for patentability, and (2) that the subcombination has utility by itself or in other combinations (MPEP § 806.05(c)). And that **Inventions III and II** are related as process and apparatus for its practice. The inventions are distinct if it can be shown that either: (1) the process as claimed can be practiced by another materially different apparatus or by hand, or (2) the apparatus as claimed can be used to practice another and materially different process. (MPEP § 806.05(e)). And that **Inventions I and III** are related as product and process of use. The inventions can be shown to be distinct if either or both of the following can be shown: (1) the process for using the product as claimed can be practiced with another materially different product or (2) the product as claimed can be used in a materially different process of using that product (MPEP § 806.05(h)). Because these inventions are distinct for the reasons given before (June 29, 2004) and have acquired a separate status in the art as shown by their different classification (see action of June 29, 2004), the requirement is still deemed proper and is therefore made FINAL.

Art Unit: 2877

2. **Claims 1-22** are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to nonelected inventions, there being no allowable generic or linking claim.

Applicant timely traversed the restriction (election) requirement in the reply filed on July 26, 2004.

Drawings and Specification

3. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: **100 of Fig. 14**. The drawings and specification are also objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: **26 of Fig. 2**. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

4. The specification is objected to for the following: on page 6 line 7 'pis' should read -p is--. Correction is required.

5. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Objections

6. **Claim 35** is a method claim improperly dependent on **claim 1**, a target system. Examiner has interpreted this claim as dependent on claim 23. Correction required.

Claim Rejections - 35 USC § 112

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. **Claims 23-36** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

As for **claim 23**, the term ‘distance between elements’ on lines 3 and 7 is indefinite, for it is unclear as to what elements are being referenced, for the grid patterns have perpendicular and parallel adjacent elements. Clarification is required. **Claims 24-36** are rejected for being dependent on a rejected base claim.

Claim Rejections - 35 USC § 102

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

10. **Claims 23, 24, 26, 28, 33, 34** are rejected under 35 U.S.C. 102(b) as being anticipated by **Ota (6,061,119)**.

As for **claims 23, 24, 26, 28, 33, 34**, providing on a layer of a substrate a first contrasting set of elements forming a first grid pattern having a distance between each elements with grid

Art Unit: 2877

segments in at two directions x and y (Fig. 6a); providing nested within at least one of the grid on the same layer, a second contrasting set of elements forming a second grid pattern having distance between elements, the second grid pattern having a plurality of grid segments in the x and y directions with adjacent parallel segments being less than the distance between adjacent parallel segments of first set of elements; wherein each of second grid pattern disposed within different segment so first grid pattern (Fig. 6b; Fig. 7b); measuring location of the first set of elements with determination of center with measuring location of second set and determining center and comparing to determine alignment error (Fig. 7b; Figs. 9a, 9b, 10; Fig. 5: W10; Fig. 11: W20); wherein measurement of location is done by scanning with an energy beam and determining a reflection intensity pattern (Fig. 5; Fig. 11); the grid segments comprise an array of nominally square frames each frame in the first set of having equal x and y dimensions and each box in the second having equal x and y dimensions (Fig. 7b); wherein the elements comprise parallel lines (Fig. 7b).

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12. **Claim 25** is rejected under 35 U.S.C. 103(a) as being unpatentable over **Ota (6,061,119)** in view of **Mishima (2003/0053057)**.

As for claim 25, Ota discloses everything as above (see claim 24). He is silent concerning digitizing the intensities with a predetermined pixel size and positions determined

Art Unit: 2877

using pixel size. However, Mishima in an alignment system teaches that sampling corresponds to pixel size (paragraph 0085). Therefore, it would be obvious to one of ordinary skill in the art at the time the invention was made that the reflection intensity is digitized and the positions are determined using pixel sizes, for intensities sampled that refer to a position of alignment attributes correspond to pixel size in alignment detection.

13. **Claims 29 and 32** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Ota (6,061,119)** in view of **Leidy et al. (6,350,548)**—cited by applicant.

As for **claims 29 and 32**, Ota discloses everything as above (see **claim 23**). He also discloses that the x and y dimensions of each grid pattern equal the distance between the elements for the main measure pattern and sub-measure pattern are squares (Fig. 7b). He is silent concerning the overlay attributes being on different layers and being rectilinear frames. However, Leidy teaches a nested overlay target including nested frames on different levels that reduce the area for overlay measurement (Figs. 5, 6b, and 8a; col. 1, lines 40-45). Therefore, it would be obvious to one of ordinary skill in the art at the time the invention was made to have the method comprise rectilinear frames nested on different levels, for rectilinear arrays of nested frames on different levels are used to minimize the area for overlay measurement.

Allowable Subject Matter

14. **Claims 27, 30, 31, and 35-36** would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

As to **claim 27**, the prior art of record, taken alone or in combination, fails to disclose or render obvious in a method of determining alignment error the different distances between

Art Unit: 2877

second sets of elements and each of second grid patterns, in combination with the rest of the limitations of **claim 27**.

As to **claim 30**, the prior art of record, taken alone or in combination, fails to disclose or render obvious in a method of determining alignment error the particular steps of scanning with an energy beam in a line across the first and second grid patterns, scanning with an energy beam in a line across the first grid patterns on the first substrate layer and the second grid pattern created on the second substrate layer, and aligning the reflected intensity pattern, in combination with the rest of the limitations of **claims 30-31**.

As to **claim 35**, the prior art of record, taken alone or in combination, fails to disclose or render obvious in a method of determining alignment error the particular period of the second set of elements, in combination with the rest of the limitations of **claim 35**.

As to **claim 36**, the prior art of record, taken alone or in combination, fails to disclose or render obvious in a method of determining alignment error the particular period of the second set of elements, in combination with the rest of the limitations of **claim 36**.

Fax/Telephone Numbers

If the applicant wishes to send a fax dealing with either a proposed amendment or a discussion with a phone interview, then the fax should:

1) Contain either a statement "DRAFT" or "PROPOSED AMENDMENT" on the fax cover sheet; and

2) Should be unsigned by the attorney or agent.

This will ensure that it will not be entered into the case and will be forwarded to the examiner as quickly as possible.

Art Unit: 2877

Papers related to the application may be submitted to Group 2800 by Fax transmission. Papers should be faxed to Group 2800 via the PTO Fax machine located in Crystal Plaza 4. The form of such papers must conform to the notice published in the Official Gazette, 1096 OG 30 (November 15, 1989). The CP4 Fax Machine number is: (703) 872-9306

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gordon J. Stock whose telephone number is (571) 272-2431.

The examiner can normally be reached on Monday-Friday, 10:00 a.m. - 6:30 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory J. Toatley, Jr., can be reached at 571-272-2800 ext 77.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private Pair system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



gs
October 17, 2004



Zandra V. Smith
Primary Examiner
Art Unit 2877